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**ATTACHMENT B**



Pharmaceutical Ingredients



**GRAIN PROCESSING CORPORATION**

Product Info    **Suggested Applications**    Description Chart    Properties Chart    News Update    Information & Sample Request

Grain Processing Corporation (GPC) Carbohydrates Suggested Applications		
Application	GPC Ingredient	Properties and Benefits
Aqueous Film Coating	MALTRIN® M040, M100, M180 PURE-COTE® B790 INSTANT PURE-COTE® B793	Film former; cold water soluble; low viscosity; enhances color
Bulking, Carrying, Blending	MALTRIN® M100, M700 MALTRIN QD® M500 PURE-DENT® B830 NF Spress® B820	Low hygroscopicity; inert carrier; selection of particle size and bulk density; neutral flavor
Capsules	MALTRIN® M510 MALTRIN QD® M500 Spress® B820	Free-flowing; inert diluent; low hygroscopicity; cohesiveness; good carrier
Creams and Lotions	MALTRIN® M040, M100, M150 PURE-GEL® B990 WATER LOCK® C200, D223	Bulks solids; nonirritating filler; inhibits crystal growth; humectant characteristics
Dry Granulation	MALTRIN® M100, M150 PURE-DENT® B700 NF, B810 NF, B830 NF Spress® B820	Inert diluent; low hygroscopicity; good binder; free flowing; good disintegration
Liquid Pharmaceuticals	MALTRIN® M100, M150	Easily dispersible; cold water soluble; regulates sweetness; viscosity control; inhibits crystal growth
Medical Nutritionals	MALTRIN® M150, M180, M200	Low viscosity; regulates osmolality; low residue; low sweetness; readily digestible

Powders (Body & Aerosol)	PURE-DENT® B700 NF PURE-DENT® B816 USP WATER LOCK® A180	Fine powder, smooth skinfeel, good absorbency
Soaps and Cleansers	MALTRIN® M040, M100, M150 PURE-GEL® B990 INSTANT PURE-COTE® B793	Nonirritating filler, humectant characteristics; builds solids; low viscosity
Spray Drying	MALTRIN® M100, M150 INSTANT PURE-COTE® B793	Neutral flavor; ease of drying; low hygroscopicity; film former; encapsulation aid
Direct Compression Tableting	MALTRIN® M150, M510 MALTRIN QD® M500 PURE-DENT® B810 NF, B830 NF Spress® B820	Free-flowing; inert diluent; good binder; low hygroscopicity; regulates sweetness; improves hardness and friability
Spill Kits	WATER LOCK® D223, G400	Superabsorbent polymer
Surgical & Exam Gloves	PURE-DENT® B851, B852	Absorbable dusting powder
Throat Lozenges	MALTRIN® M100, M150, M180	Regulates sweetness; inhibits crystal growth; maintains clarity
Wet Granulation	MALTRIN® M040, M100, M150 PURE-DENT® B880 NF, B890 NF Spress® B825	Low viscosity; cold water soluble; excellent binder; inert diluent; good disintegration
Wound Dressings	WATER LOCK® A180, A220	Absorb body fluids

Spress®, MALTRIN®, MALTRIN QD®, PURE-DENT®, PURE-COTE®, INSTANT PURE-COTE®, PURE-GEL® and WATER LOCK® are trademarks of Grain Processing Corporation.

Call Toll Free from U.S. and Canada: 800-448-4472

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# TATE & LYLE



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## Food Starches



About Applications:

This section describes the Amylum Group product range of native and modified food starch.

- Meritena native maize, wheat, and tapioca starch
- Merigel instant modified and native waxy maize, maize and wheat starch
- Resistamyl cook-up modified waxy maize and wheat starch
- Mira-Thik® and Mira-Sperse® instant granular modified waxy maize and maize starch
- Thibola thin boiling wheat and maize starch

These modified food starches are widely used throughout the food industry to improve the appearance, stability, texture, and quality of food products.

The Amylum Group is a leading supplier of native and modified starch to the food industry. The starches in our product range are produced at our state-of-the-art plants in Europe and at A.E. Staley in Decatur, USA.

Our range of native and modified food starch provides the complete functionality our customers require to produce economically and consistently high quality food products. Our technical support service provides our customers with the means to develop traditional and innovative new food products quickly.

### Native food starch

Our native food starches are extracted from European wheat and maize by a process of milling, physical separation, and washing. They are widely used in food products to provide:

- A carbohydrate source
- Body and bulk
- Viscosity
- Crispy texture in snacks and cereals

The Meritena brand of native maize, wheat, and waxy maize starch is available as white or creamy white powders. Normally sold at 14% moisture, they are also available in low-moisture content and in pre-gelatinized and spray-cooked forms.

### Modified food starch

TATE & LYLE Amylum Group produces a wide range of modified food starch to meet the needs of today's food industry. They provide improved functionality, consistency, and reliability to withstand the rigours of modern food processing and satisfy consumer demand for innovative and high-quality foods.

The following processes are used to produce our modified food starch:

Cross-linking with phosphates or adipates to:

- Improve resistance to high temperature, low pH, and high shear
- Modify the texture provided by the cooked starch

Stabilization by etherification or esterification (acetate or hydroxypropyl modification)

- Reduces the starting gel point of the starch
- Modifies the gel properties of the starch and improves the shelf-life of the food
- Improves resistance to freeze/thaw cycles and syneresis
- Improves the clarity of the starch gel

Pre-gelatinization

The drum drying process is used to produce Merigel. These cold-water soluble starches thicken when added to cold or warm water and are excellent texturing agents for cold process and instant foods.

Mira-Sperse®, Mira-Thik®, Soft-Set®, and Mira-Gel® granular cold-water soluble starches are produced by A.E. Staley using a state-of-the-art pre-gelatinization process that maintains the granule structure of the starch. These starches retain the texture of traditional cook-up starches and show a reduced tendency to lump.

Thinning

Dextrinization or acid hydrolysis may be used to reduce the cooked starch viscosity. These starches may then be used at high concentrations and still remain pumpable when hot.

A single modification technique or a combination of these processes is used to produce modified food starches that meet specifically required functions.

#### **Food starches**

TATE & LYLE Amylum Group brands and trade names:

- Meritena - Native wheat, maize, waxy maize, and tapioca starch.
- Merigel, Binamol™, Redi-Tex®, X-Pand'R® - Traditional pre-gelatinized native and modified starch.
- Mira-Thik®, Mira-Gel®, Soft-Set® - Granular pre-gelatinized starch.
- Mira-Sperse® - Agglomerated granular pre-gelatinized native and modified maize and waxy maize starch.
- Resistamyl - Cook-up waxy modified starch.
- Consista®, Maxi-Gel®, Mira-Clear®, Perma-Flo®, Rezista®, Thin-N-Thik® - Cook-up maize and waxy maize starch with hydroxypropyl stabilization combined with various other modifications.

#### **Quality**

Our native and modified food starches are produced under GMP conditions to the highest

quality standards, using written procedures. We provide:

- Full product specifications and test methods
- Certificates of analysis

Our food starches meet the requirements of EC Directive 2000/63/EC that lays down specific purity criteria for food additives other than colours and sweeteners. Our modified food starch plant in Koog, the Netherlands is ISO 9002 accredited.

#### Packaging

Our food starches are available in:

- 25kg bags
- Big bags
- Bulk tankers
- Some A.E. Staley products come in 50 and 100lb bags

#### Labelling

Our native starches should be labelled as 'native maize', 'wheat' or 'tapioca' starches respectively. Our modified food starches should be labelled as 'modified food starch' or use the corresponding 'E' number.

#### World Leader in Carbohydrate Ingredients

Amylum in Europe and Staley in the US, as part of the Tate & Lyle Group offer leadership in the areas of maize (corn) and wheat derived, value-added products such as sweeteners, food and industrial starches, ethanol, protein and animal feeds. The Tate & Lyle Group products are sold and distributed world-wide through a network of sales offices and representatives. Click [here](#) for additional information on Staley Food Starches Products.



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